ONTARIO MINISTRY OF ENVIRONMENT
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OPERATING SUMMARY

POINT EDWARD

water pollution control plant

1968

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1968

Point Edward : water pollution control plant.
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Water management in Ontario

Ontario
Water Resources
Commission

135 St. Clair Ave. W.
Toronto 7
Ontario

We are pleased to present you with the Operating Summary for the water pollution control facilities operated for you during 1968.

Both the financial and technical information presented should be of assistance to your present and future planning in this important phase of municipal activity.

A new format has been devised to allow greater readability with equally detailed content. We trust that this will meet with your approval.

Our staff wish to express their appreciation for your co-operation throughout the year.

D. S. Caverly,
General Manager.

D. A. McTavish, P. Eng.,
Director,
Division of Plant Operations.

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RESOURCES COMMISSION

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Toronto 7

POINT EDWARD

water pollution control plant

operated for

THE VILLAGE OF POINT EDWARD

by the

ONTARIO WATER RESOURCES COMMISSION

1968 ANNUAL OPERATING SUMMARY

FOREWORD

● This operating summary outlines the project's technical capabilities and financial status in 1968. Such information mirrors past and present performance, but a major intention is to anticipate the future -- to solve problems before they occur.

The new format in which this year's data are presented is designed to offer a higher level of readability than in the past, without a corresponding decrease in compactness, accuracy and detail.

Although your Regional Operations Engineer carries the major responsibility for the contents of the report, those involved in its preparation are attached to several Commission sections and divisions. The statistics section of the Division of Plant Operations compiled the information for the graphs and charts. The draughting section of the Division of Sanitary Engineering drew the graphs. The Division of Finance provided all cost data.

Only the close co-operation of these departments allowed the publication of this summary.

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'68 REVIEW

During 1968, the Point Edward Water Pollution Control Plant provided primary treatment and chlorination for only 75.95 million gallons of sewage. This was a decrease of 0.9 percent from 1967. Average removal efficiencies of 29 percent BOD and 66 percent for suspended solids were achieved for the year.

The operating costs for 1968 increased from the previous year by 21 percent, resulting in a cost per million gallons treated of $214.60. The increase was largely due to increased maintenance costs, salary increases and increased chemical and power costs. Due to the lower efficiency of BOD removal, the cost per pound of BOD removed was doubled from the 1967 value.

Routine inspections of the buildings, grounds and mechanical and electrical equipment revealed no major deficiencies during 1968. Much equipment was overhauled as part of the scheduled maintenance program. The operator encountered no serious problem with the sewer cleaning program.

The Point Edward Water Pollution Control Plant is efficiently operated by Chief Operator Gordon Barwise. Assistance is provided on complex technical problems by Ontario Water Resources Commission head office staff.

During 1968, casual help was used for weekend relief, holidays, sickness and for an extensive painting program. Supervision at the plant is limited to 36 hours during the week-days and a two-hour period on each day of the weekend. High sewage levels in the wet well at the plant, indicative of either a power or equipment failure, are telemetered to the operator's house, where an alarm has been installed.

Mr. Barwise attended the Chief Operators' conference in Toronto in October, 1968.

PROJECT COSTS

2-0183-65

NET CAPITAL COST (Estimated) Long Term Debt to OWRC	$47,428.72
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1968	$ 2,683.00
Net Operating	$ -
Debt Retirement	1,259.00
Reserve	248.46
Interest Charged	2,642.16
TOTAL	$ 4,149.62

RESERVE ACCOUNT

Balance at January 1, 1968	$ 259.54
Deposited by Municipality	248.46
Interest Earned	21.16
	$ 529.16
Less Expenditures	-
Balance at December 31, 1968	$ 529.16

NET CAPITAL COST (Final) Long Term Debt to OWRC	$779,773.82
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1968	$143,021.55
Net Operating	$ 16,298.62
Debt Retirement	15,736.00
Reserve	3,860.35
Interest Charged	43,779.17
TOTAL	$ 79,674.14

RESERVE ACCOUNT

Balance at January 1, 1968	$ 37,057.56
Deposited by Municipality	3,860.35
Interest Earned	2,264.01
	$ 43,181.92
Less Expenditures	842.00
Balance at December 31, 1968	$ 42,339.92

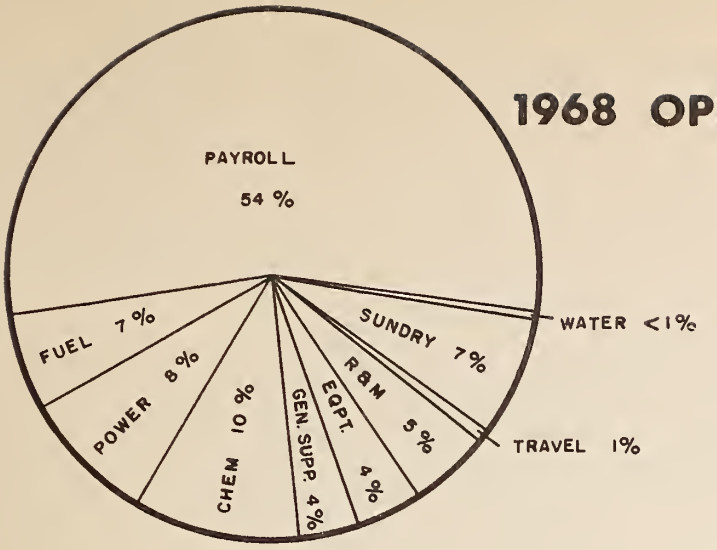
Monthly Operating Costs

MONTH	TOTAL EXPENDITURE	PAYROLL	CASUAL PAYROLL	FUEL	POWER	CHEMICAL	GENERAL SUPPLIES	EQUIPMENT	REPAIRS & MAINTENANCE	* SUNDRY	WATER	TRAVEL
JAN	837.55	498.63	48.16	123.20	97.26	-	7.25	-	49.03	3.40	10.62	-
FEB	1518.94	498.63	32.00	204.14	115.71	-	45.65	283.45	243.93	87.80	-	7.63
MAR	1181.19	796.85	48.00	80.04	107.76	-	29.73	-	26.55	92.26	-	-
APRIL	1046.32	498.63	55.36	118.64	116.07	-	70.60	83.00	60.74	30.40	-	12.88
MAY	1259.24	498.63	24.00	97.31	103.03	436.86	35.11	25.20	-	19.60	10.82	8.68
JUNE	1219.98	498.63	440.93	62.01	98.75	-	62.91	-	-	56.75	-	-
JULY	1705.69	488.42	353.41	79.74	99.97	212.63	92.74	221.76	35.21	100.91	10.26	10.64
AUG	1662.17	753.05	289.02	30.69	140.91	238.61	74.05	-	43.05	82.85	-	9.94
SEPT	767.67	488.42	58.02	72.79	-	-	37.03	-	27.55	73.60	10.26	-
OCT	1266.78	522.64	54.27	46.15	247.95	238.61	47.93	-	50.40	48.12	-	10.71
NOV	1652.83	491.15	32.00	85.18	136.90	238.61	33.46	-	141.25	402.13	10.80	81.35
DEC	2180.26	1319.69	24.00	140.68	125.68	238.61	66.42	-	115.40	149.78	-	-
TOTAL	16298.62	7353.37	1459.17	1140.57	1389.99	1603.93	602.88	613.41	793.11	1147.60	52.76	141.83

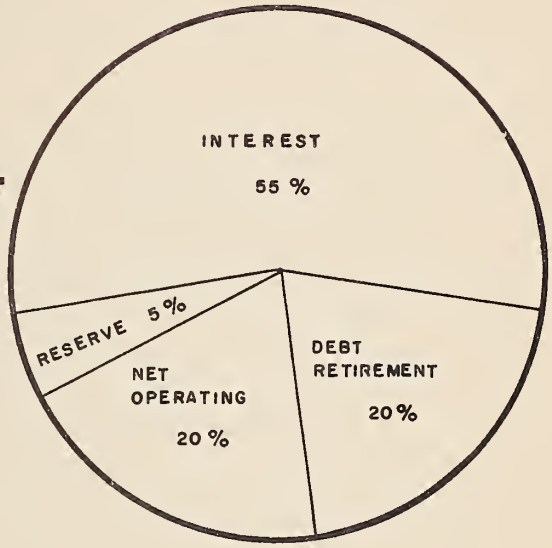
*SUNDRY INCLUDES SLUDGE HAULING COSTS WHICH WERE $285.60

BRACKETS INDICATE CREDIT

1968 OPERATING COSTS



TOTAL ANNUAL COST



Yearly Operating Costs

YEAR	M.G.TREATED	TOTAL COST	COST PER MILLION GALLONS	COST PER LB OF BOD REMOVED
1964	66.63	$12,451.09	$186.88	$0.23
1965	71.18	13,272.64	184.83	0.23
1966	75.92	12,800.22	168.61	0.21
1967	76.61	13,419.58	175.17	0.20
1968	75.95	16,298.62	214.60	0.40

Process Data

A total of 75.95 million gallons of sewage was treated during 1968 for a load factor of .363. The average daily flow was 0.207 and the average monthly flow was 6.33 million gallons. The highest daily flow recorded was 506,000 gallons one day in February, and the lowest was 156,000 gallons in June. The highest monthly total occurred in July. The highest flow showed a load factor of 89 percent.

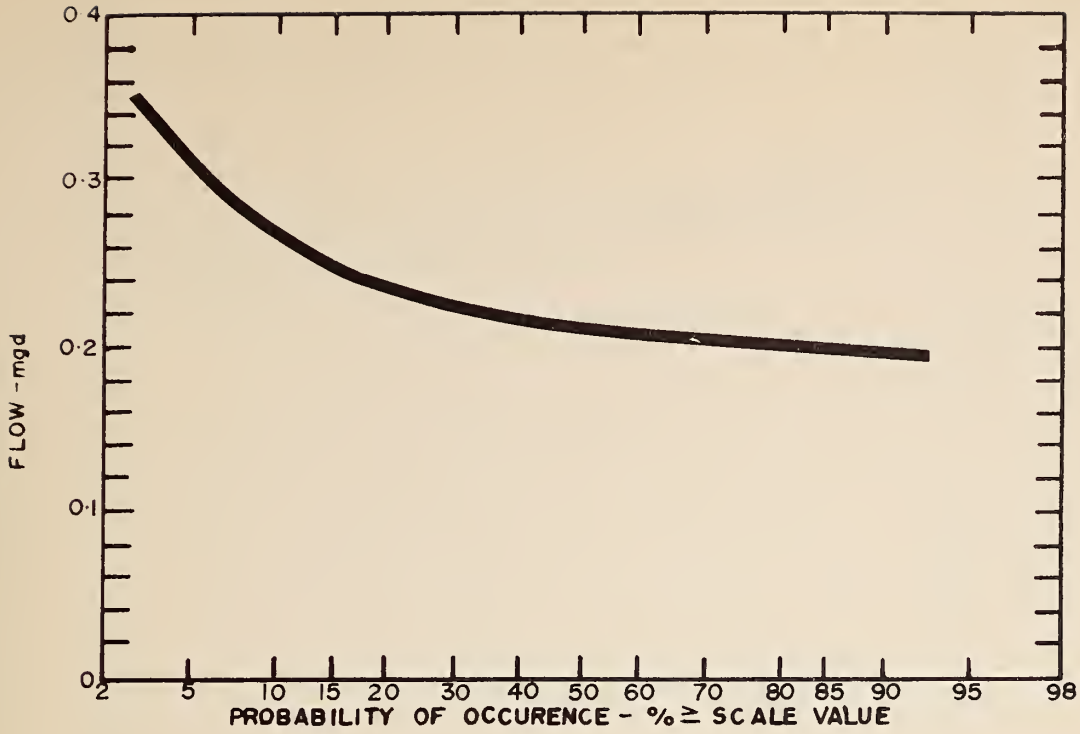
It should be noted that the average yearly flows for 1966 through 1968 have been nearly constant.

CHLORINATION

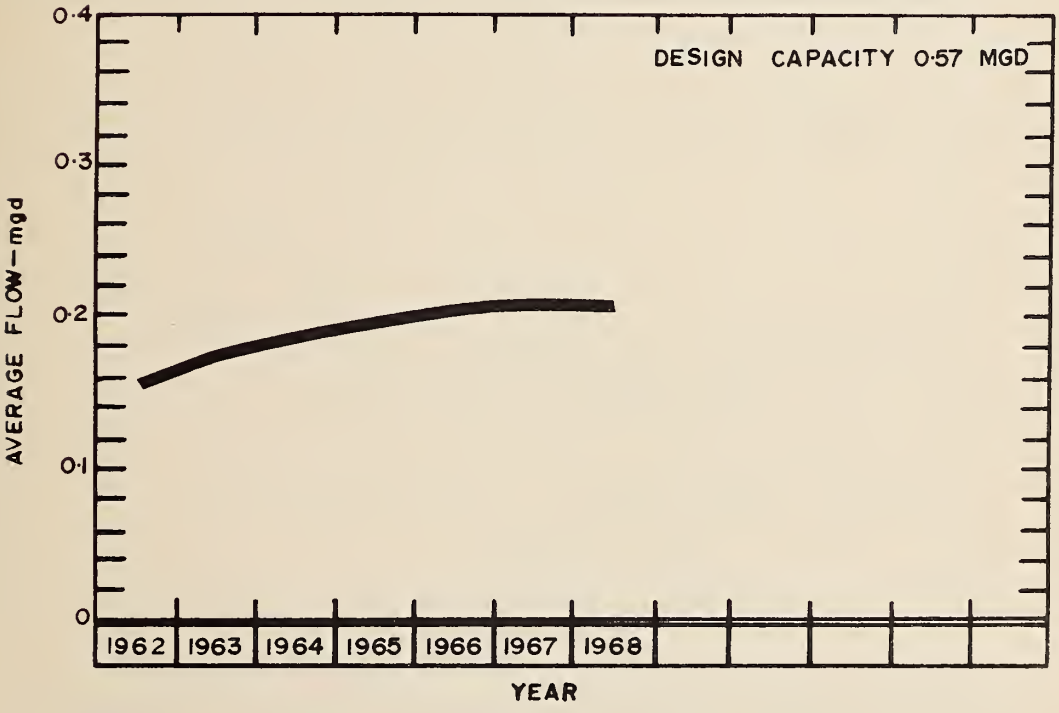
Disinfection of the final effluent from the Point Edward plant is practised 12 months of the year. During 1968, 10,265 pounds of chlorine were required at an average dosage of 13.5 mg/l. This is slightly higher than the 1967 dosage. The effluent is discharged to the St. Clair River, approximately 1200 feet downstream from the City of Sarnia water intake.

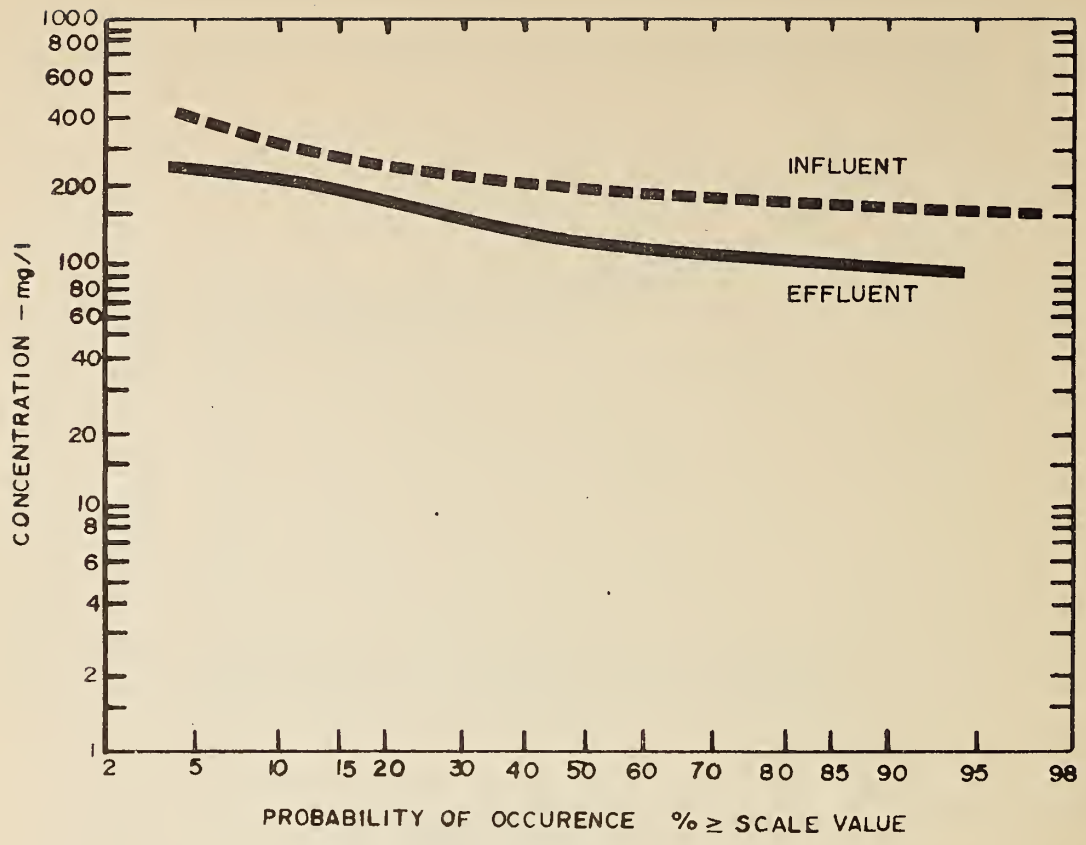
PLANT FLOWS and CHLORINATION

MONTH	TOTAL FLOW mg	AVERAGE DAILY FLOW mg	MAXIMUM DAILY FLOW mg	MINIMUM DAILY FLOW mg	CHLORINE USED lbs.	DOSAGE mg/l
JAN	7.03	.227	.401	.186	795	11.3
FEB	6.86	.237	.506	.172	403	7.1
MAR	6.52	.210	.294	.175	624	14.2
APR	6.27	.209	.256	.187	942	15.0
MAY	6.12	.197	.313	.177	1004	16.4
JUN	6.15	.205	.210	.156	737	12.0
JUL	7.07	.228	.407	.182	899	12.7
AUG	6.26	.202	.278	.180	959	15.3
SEPT	5.83	.194	.226	.180	1064	18.2
OCT	5.94	.192	.222	.169	1196	20.1
NOV	6.00	.200	.272	.175	1018	17.0
DEC	5.90	.190	.197	.184	927	15.7
TOTAL	75.95	-	-	-	10265	-
AVERAGE	-	.207	-	-	856	13.5

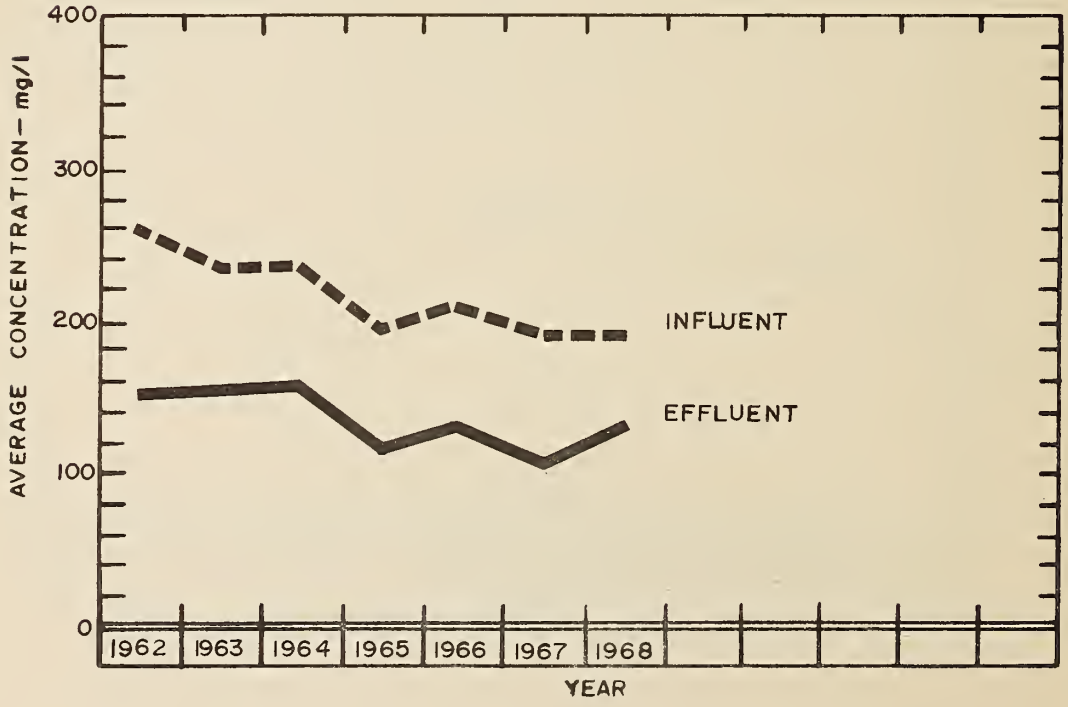

0·4
0·3
0·2
0·1
0
FLOW - mgd
2
5
10
15
20
30
40
50
60
70
80
85
90
95
98
PROBABILITY OF OCCURENCE - % ≥ SCALE VALUE

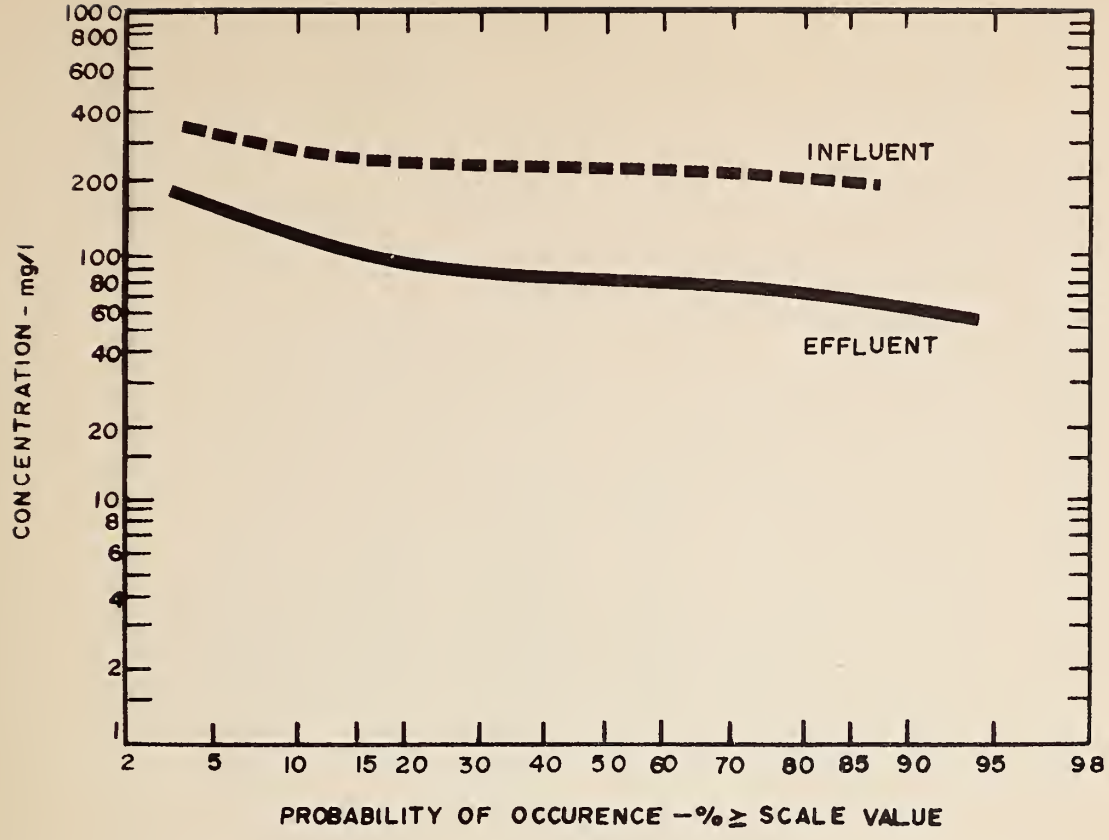
FLOWS


0·4
0·3
0·2
0·1
0
AVERAGE FLOW — mgd
DESIGN CAPACITY 0·57 MGD
1962
1963
1964
1965
1966
1967
1968
YEAR

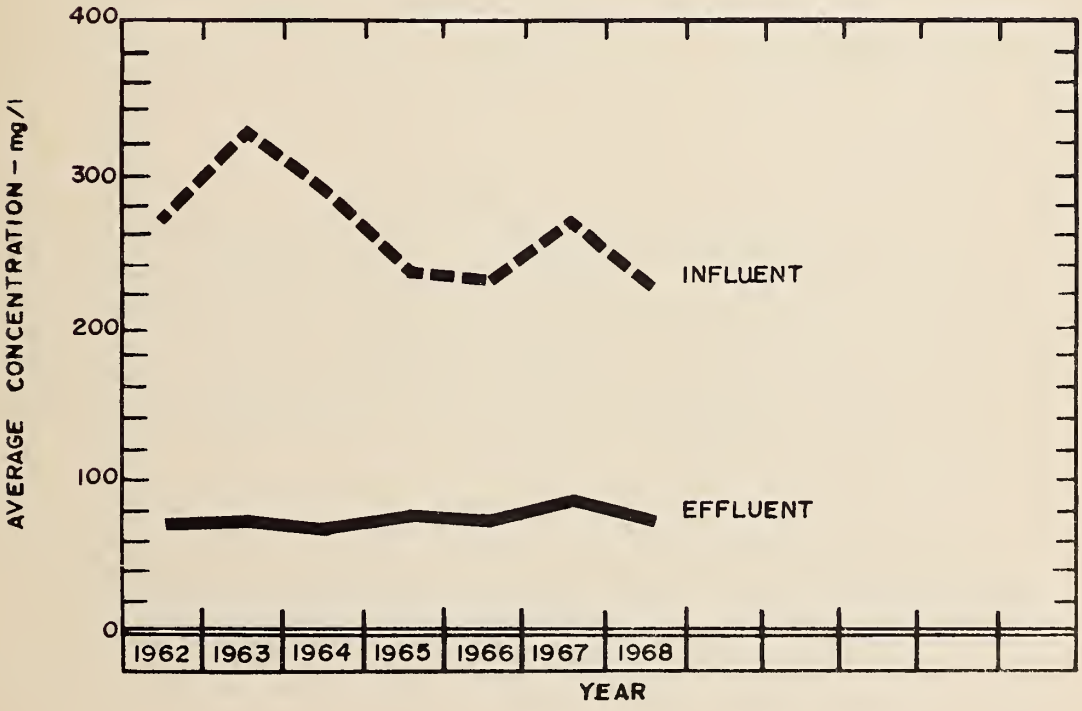


BIOCHEMICAL OXYGEN DEMAND





SUSPENDED SOLIDS



PLANT EFFICIENCY

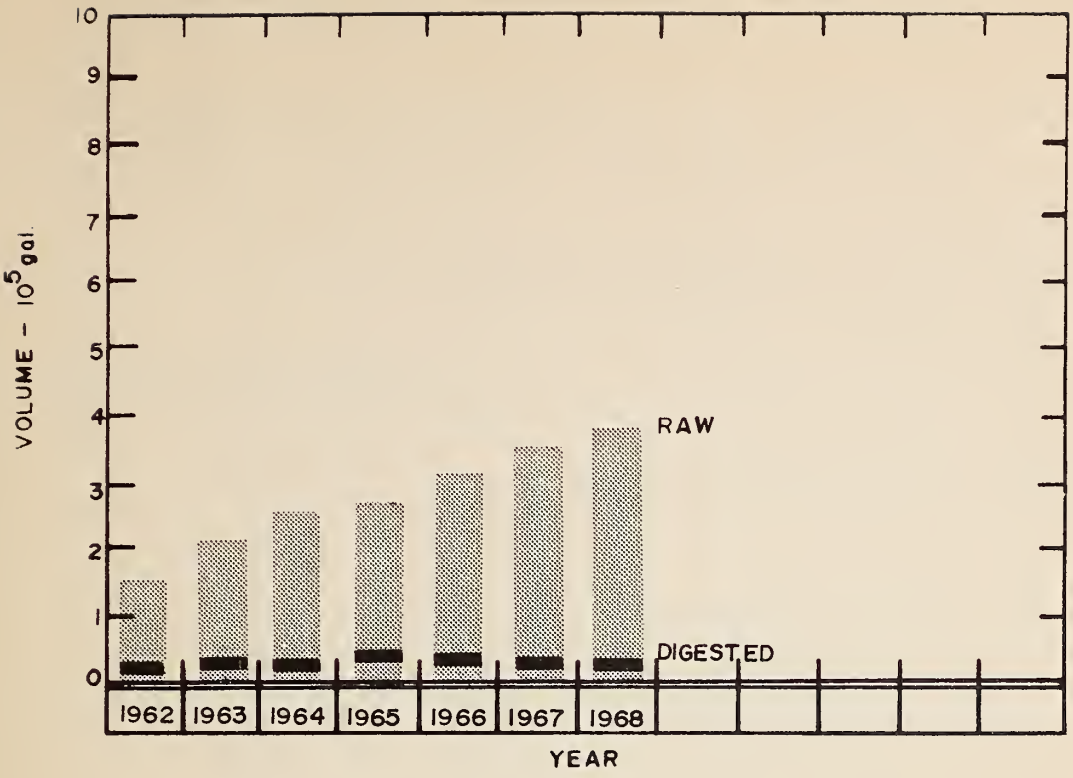
MONTH	BIOCHEMICAL OXYGEN DEMAND				SUSPENDED SOLIDS				GRIT
	INF CONC^N mg/l	EFF CONC^N mg/l	RED^N %	REMOVAL 10^3 lb	INF CONC^N mg/l	EFF CONC^N mg/l	RED^N %	REMOVAL 10^3 lb	REMOVAL ft^3
JAN	163	108	34	3.9	241	82	66	11.2	16
FEB	159	100	37	4.0	183	70	62	7.8	25
MAR	146	90	38	3.6	192	83	57	7.1	7
APR	137	113	18	1.5	214	65	70	9.3	6
MAY	200	172	14	1.7	226	78	66	9.1	5
JUN	204	157	23	2.9	213	114	46	6.1	11
JULY	151	100	34	3.6	215	57	74	11.2	17
AUG	182	130	29	3.2	293	66	78	14.2	14
SEPT	188	115	39	4.2	239	60	75	10.4	10
OCT	232	166	28	3.9	204	76	63	7.6	8
NOV	319	222	30	5.8	217	74	66	8.6	8
DEC	250	105	58	8.6	224	82	63	8.4	7
TOTAL	-	-	-	46.9	-	-	-	110.9	134
AVERAGE	186	132	29	3.9	222	76	66	9.2	11

COMMENTS

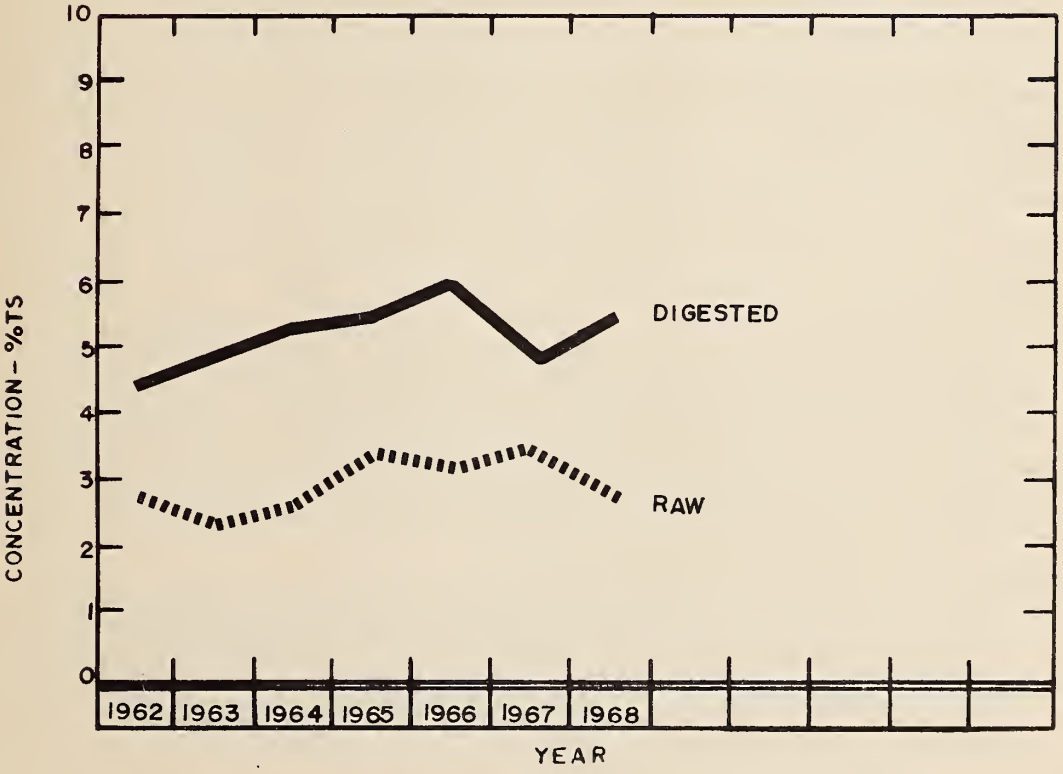
The raw sewage BOD average of 186 mg/l was slightly lower in 1968 compared to the 1967 value of 190 mg/l, and the suspended solids concentration average 16 percent lower with 222 mg/l compared to 265 mg/l in 1967. These results are based only on twice monthly samples. The plant provided an average reduction of 29 percent for BOD and 66 percent for suspended solids. The suspended solids removal is slightly higher than the design value of 60 percent, due to the low hydraulic load factor; however, removal of BOD is lower than the design value of 47 percent.

The efficiency of BOD removal was considerably less than in the preceding two years, possibly due to a greater soluable BOD percentage in the raw sewage.

Grit removal averaged 1.7 cubic feet per million gallons and is within the range normally encountered.


VOLUME - 10^5 gal.
10
9
8
7
6
5
4
3
2
1
0
RAW
DIGESTED
1962
1963
1964
1965
1966
1967
1968
YEAR

DIGESTION


CONCENTRATION - %TS
10
9
8
7
6
5
4
3
2
1
0
DIGESTED
RAW
1962
1963
1964
1965
1966
1967
1968
YEAR

SLUDGE DIGESTION and DISPOSAL

MONTH	RAW SLUDGE			DIGESTED SLUDGE			SUPERNATANT		SLUDGE DISPOSAL	
	VOLUME 10^3 gal	T. S. %	V.S. %	VOLUME 10^3 gal	T. S. %	V.S %	VOLUME 10^3 gal	T. S. %	LIQUID yd^3	DEWATERED yd^3
JAN	32.6	2.4	76	7.6	4.4	64	-	1.2	45	0
FEB	30.4	2.9	55	0	5.4	48	-	1.0	0	0
MAR	32.6	2.0	79	3.0	5.7	58	-	-	18	0
APR	31.5	2.3	77	3.0	5.3	58	-	.5	18	0
MAY	32.6	2.1	81	3.0	5.0	61	-	.3	18	0
JUN	31.2	4.3	86	3.0	4.7	60	2.0	.4	18	0
JUL	30.8	3.2	44	0	5.2	58	-	.5	-	0
AUG	31.3	2.8	74	0	5.3	58	-	1.3	18	0
SEPT	29.6	3.0	72	0	5.9	58	-	.9	-	-
OCT	30.0	3.5	78	4.0	8.0	60	-	.8	24	0
NOV	49.8	2.1	75	1.3	6.4	58	-	1.3	8	0
DEC	27.9	3.9	81	4.0	5.1	59	-	1.1	24	0
TOTAL	390.3	-	-	28.9	-	-	-	-	173	0
AVERAGE	32.5	2.9	73	2.4	5.5	58	2.0	.8	14	0

COMMENTS

Again in 1968, there was a 5.5 percent increase in the volume of raw sludge pumped to the digester and a decrease in the concentration of solids. Since the flow decreased by 0.9 percent, this reflects a further decrease in the efficiency of the clarifier in the concentration of raw sludge. The 28,900 gallons of digested sludge removed was 7.2 percent of the volume of the raw sludge.

There was a total reduction of volatile matter during the year of 49 percent. The volatile content of the hauled sludge was 58 percent of the solids and changed little from 1967. Methane produced from the digestion process was burned as a waste product. Digested sludge was hauled and disposed of at a cost of $1.50 per cubic yard.

CONCLUSIONS

The plant operated at 36.3 percent of hydraulic capacity and has considerable reserve for primary treatment. It should not require hydraulic expansion for a good many years.

Since the plant is only a primary plant, it has never met the Ontario Water Resources Commission objectives in BOD and suspended solids reduction to 15 mg/l. There was an increase in total cost of operation over 1967 to $214.60 per million gallons treated. It should be noted that a substantial decrease in efficiency of BOD removal occurred during the year.

Water management in Ontario